

What is claimed:

Claim 1. A method for producing one or more patterned metal objects on a substrate comprising the steps of:

5 a) applying a metal composition on a thermally resistant temporary substrate in the patterns of the one or more patterned metal objects;

b) curing said metal composition at a temperature below about 450 °C for a time less than about 30 minutes to form the one or more patterned metal objects;

c) transferring the one or more patterned metal objects from said temporary substrate to one side of the substrate without the use of a separately supplied adhesive

10 wherein said metal composition is comprised of one or more metal powders in a reactive organic medium, said reactive organic medium consisting of one or more components selected from the group consisting of metallo-organic compounds which can decompose into elemental metal and volatile organic fragments, reagents which can react with said one or more metal powders to form metallo-organic compounds which can decompose into elemental metal and
15 volatile organic fragments, and mixtures thereof.

Claim 2. The method of claim 1 wherein in transferring step c) said one or more patterned metal objects are directly transferred to said substrate by the application of heat and pressure.

Claim 3. The method of claim 2, wherein said substrate is a cured substrate.

Claim 4. The method of claim 1 wherein said transferring step c) comprises placing one or
20 more layers of a substrate precursor in contact with said one or more patterned metal objects on said temporary substrate and then curing said substrate precursor in place to form the substrate having said one or more patterned metal objects incorporated therein.

Claim 5. The method of claim 1 further comprising the steps of:

decomposable compound or one or more reagents which form a decomposable compound with said metal particles

Claim 12. The method of claim 11 wherein said decomposable compound in the reactive organic medium has a weak heteroatom bond to the metal such that it will decompose at a temperature which said temporary substrate can withstand.

Claim 13. The method of Claim 12 wherein said heteroatom is selected from the group consisting of O, N, S, P, and As.

Claim 14. The method of Claim 11 in which said metal particles are selected from the group consisting of the group IB, IIB, IVA, VA, VI A, VII A and VIIIA metals, manganese, indium, tin, antimony, lead and bismuth.

Claim 15. The method of claim 5, wherein step f) comprises placing a previously made double sided circuit and an additional substrate over said one or more patterned objects and then transferring said additional one or more patterned metal objects from said second temporary substrate to said substrate and previously made circuit to make a multilayer.

Claim 16. A substrate having one or more patterned metal objects on one or more sides of the substrate made by the method comprising the steps of:

a) applying a metal composition on a thermally resistant temporary substrate in the patterns of the one or more patterned metal objects;

b) curing said metal composition at a temperature below about 450 °C for a time less than about 30 minutes to form the one or more patterned metal objects;

c) transferring the one or more patterned metal objects from said temporary substrate to one side of the substrate

wherein said metal composition is comprised of one or more metal powders in a reactive organic medium, said reactive organic medium consisting of one or more components selected from the group consisting of metallo-organic compounds which can decompose into elemental

metal and volatile organic fragments, reagents which can react with said one or more metal powders to form metallo-organic compounds which can decompose into elemental metal and volatile organic fragments, and mixtures thereof.

Claim 17. A patterned metal object on a substrate, made using the method of claim 1.

- 5 Claim 18. The patterned metal object on a substrate of claim 17 wherein said patterned metal object is selected from the group consisting of strain gauges, Tape Automated Bonding Decals, and thermocouples.